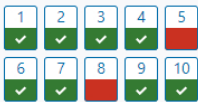


## QUIZ NAVIGATION



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Started on	Friday, 11 October 2024, 5:56 PM
State	Finished
Completed on	Friday, 11 October 2024, 6:02 PM
Time taken	6 mins 56 secs
Grade	8.00 out of 10.00 (80%)

## Question 1

ID: 50190

Correct

Flag question

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You are a pharmacist working in the outpatient psychiatry clinic at the local hospital. Today you have an appointment with KG, a 72-year-old female. She is coming in with her daughter because of recent concerns with memory loss. Over the phone, KG's daughter explained that her mother often loses things like her house keys and her phone. She seems to forget things even after they are repeated to her multiple times and she keeps asking the same questions over and over. KG's daughter is concerned that her mother may be developing Alzheimer's disease. Her past medical history is significant for depression, diabetes, dyslipidemia, and hypertension. Her list of medications includes:

- Escitalopram 20 mg PO daily
- Metformin 500 mg PO TID
- Sitagliptin 100 mg PO daily
- Atorvastatin 20 mg PO daily at bedtime
- Hydrochlorothiazide 25 mg PO daily

Which of the following assessment tools would you use to assess KG's level of cognitive impairment associated with dementia?

Select one:

- ☐ Patient Health Questionnaire-9 (PHQ-9) ✖
- ☐ Stanford-Binet Intelligence Test (SB) ✖
- ☒ Montreal Cognitive Assessment (MoCA) ✔
- ☐ Functional Assessment Staging Tool (FAST) ✖

Rose Wang (ID:113212) this answer is correct. This assessment tool can be used to assess for cognitive impairment in dementia.

**Correct**

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease**LEARNING OBJECTIVE:**

Identify which tools can assess for cognitive impairment.

**BACKGROUND:**

Cognitive impairment is often assessed by presenting symptoms, relevant history, and the use of validated tools to assess if the impairment is a normal part of ageing or pathological in nature. Montreal Cognitive Assessment (MoCA) and Mini-Mental State Examination (MMSE) are used to assess cognitive impairment. These tools assess things such as memory, visuospatial sense, attention and delayed recall. Functional Assessment Staging Tool (FAST) is used to measure functional disability of patients with dementia. FAST assesses the ability to complete activities of daily living (ADL), such as driving, taking medications, and using the phone. This tool does not assess for cognitive impairment, but rather functionality.

**RATIONALE:****Correct Answer:**

- **Montreal Cognitive Assessment (MoCA)** - This assessment tool can be used to assess for cognitive impairment in dementia.

**Incorrect Answers:**

- **PHQ-9** - PHQ-9 is used to screen, diagnose, and monitor depressive symptoms.
- **SB** - SB is used to assess cognitive ability.
- **Functional Assessment Staging Tool (FAST)** - This tool does not assess for cognitive impairment, but rather functionality.

**TAKEAWAY/KEY POINTS:**

MoCA is used to assess cognitive impairment in dementia.

**REFERENCE:**

[1] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrxtx.ca>.

The correct answer is: Montreal Cognitive Assessment (MoCA)

## Question 2

ID: 50195

Correct

Flag question

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You are working at a community pharmacy when YH and his son approach your counter. YH's son explains to you that they are here to pick up his father's new Alzheimer's medication, donepezil. YH tells you that over the past few months, he has had a hard time remembering things. YH used to live independently in his apartment but lately has had trouble managing on his own. There was a recent incident where he forgot to turn off the stove and it resulted in a small fire. His son is concerned for his safety but YH refuses to move into a retirement home. His son has convinced him to move in with him and has been helping take care of him. YH understands that although donepezil may not cure Alzheimer's, it may slow the progression of the disease. He asks you how long this medication usually takes to work.

Which time frame would be most appropriate to assess efficacy for cholinesterase inhibitors?

Select one:

- ☐ 7-14 days ✗
- ☐ 9-12 months ✗
- ☒ 1-6 months ✓
- ☐ 2+ years ✗

Rose Wang (ID:113212) this answer is correct. Cholinesterase inhibitors typically show efficacy within months of initiation.

## Correct

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Identify the time frame in which cholinesterase inhibitors show efficacy.

**BACKGROUND:**

Alzheimer's disease (AD) occurs as a result of the progressive destruction of cholinergic pathways in the brain secondary to neurofibrillary tangles and neuritic plaques. Cholinesterase inhibitors are often used first line for the management of AD.

The efficacy of cholinesterase inhibitors is typically observed between 3-6 months in clinical trials. Some benefit may be seen as early as 1 month and may take as long as 6 months.

**RATIONALE:****Correct Answer:**

- **1-6 months** - Cholinesterase inhibitors typically show efficacy within months of initiation.

**Incorrect Answers:**

- **7-14 days** - It takes longer for cholinesterase inhibitors to show efficacy.
- **9-12 months** - Cholinesterase inhibitors tend to show efficacy earlier than this time frame.
- **2+ years** - Cholinesterase inhibitors tend to show efficacy earlier than this time frame.

**TAKEAWAY/KEY POINTS:**

Cholinesterase inhibitors typically show efficacy within months of initiation.

**REFERENCE:**

[1] Winslow BT et al. *Treatment of Alzheimer Disease*. American Family Physician. 2011;83(12):1403-1412. <http://www.aafp.org/afp/2011/0615/p1403.html>.

[2] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.

The correct answer is: 1-6 months

## Question 3

ID: 55872

Correct

Flag question

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PS is a 75-year-old female who is diagnosed with moderate Alzheimer's Disease (AD). The doctor prescribes a starting dose of donepezil 5 mg PO daily. After 6 weeks of therapy, the family has noticed a small improvement in PS's cognitive symptoms and has not noticed any worsening of her dementia. She has not experienced any adverse reactions to donepezil over the 6-week span. Her past medical history is significant for hypertension, dyslipidemia, and osteoarthritis. Her medications include indapamide 2.5 mg PO daily, pravastatin 40 mg PO daily, and acetaminophen 1000 mg PO TID.

What is the most appropriate recommendation at this time?

Select one:

- ☐ Discontinue donepezil ✗
- ☐ Reduce the dose of donepezil to prevent adverse effects ✗
- ☒ Increase the dose of donepezil for a better response to therapy ✓
- ☐ Add risperidone to the current drug therapy regimen ✗

Rose Wang (ID:113212) this answer is correct. This is the best choice as a small benefit was observed on a starting dose of donepezil. Titrating the dose towards an optimal dose may increase the efficacy.

Correct

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Understand when drug titration is indicated for Alzheimer's Disease (AD).

**BACKGROUND:**

One of our goals of therapy for patients with AD is to preserve and stabilize cognitive function. This is often achieved modestly by drug therapies such as cholinesterase inhibitors and NMDA antagonists. Donepezil is a cholinesterase inhibitor that is indicated for use in mild to severe AD to stabilize and preserve cognitive function. Donepezil works by increasing acetylcholine levels in the brain, which we know there is an imbalance of in AD. It takes 3-6 months to show efficacy. It is important to note that efficacy in AD doesn't necessarily mean an improvement in cognition, but rather efficacy means slowing the progression/stabilizing cognitive decline. If a patient's cognitive function has not worsened while on the drug, this would mean the drug is working. If the patient is not experiencing adverse effects and their cognitive function has improved or remained stable, we can start to titrate up the dose as tolerated. The target dose of donepezil is 10 mg PO daily and the dose may be titrated up every 4 weeks. The reason for slow titration is to minimize side effects that the patient may experience, including nausea, vomiting, diarrhea, fatigue, sleep disturbances, increased urinary frequency, headache, anorexia/weight loss, bradycardia, and syncope. Note that patients are at risk for withdrawal symptoms secondary to abrupt discontinuation of cholinesterase inhibitor therapy and must be slowly tapered off the medication as well.

**RATIONALE:**

**Correct Answer:**

- **Increase the dose of donepezil for a better response to therapy** - This is the best choice as a small benefit was observed on a starting dose of donepezil. Titrating the dose towards an optimal dose may increase the efficacy.

**Incorrect Answers:**

- **Discontinue donepezil** - Discontinuation is not the most appropriate course of action as a small benefit was observed.
- **Reduce the dose of donepezil to prevent adverse effects** - This is not the most appropriate option as this would be more likely to decrease efficacy and the patient has not reported any adverse effects.
- **Add risperidone to the current drug therapy regimen** - This is not the most appropriate option as antipsychotics are reserved for patients presenting with uncontrolled agitation or psychosis and should not be used long-term if possible.

**TAKEAWAY/KEY POINTS:**

When a patient's response to therapy is stabilization or improvement in their cognitive function and no side effects have been reported, consider titrating the therapy to a favorable response.

**REFERENCE:**

[1] Aricept. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.

[2] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.

The correct answer is: Increase the dose of donepezil for a better response to therapy

**Question 4**

ID: 50202

Correct

Flag question

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Which of the following medications would be most appropriate to treat a patient with dementia who is severely agitated and aggressive and has failed non-pharmacological options?

Select one:

☒ Risperidone ✓

Rose Wang (ID:113212) this answer is correct. Second-generation antipsychotics are appropriate options for patients with dementia who are severely agitated and aggressive.

☐ Memantine ✗

☐ Sertraline ✗

☐ Haloperidol ✗

Correct

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's disease

**LEARNING OBJECTIVE:**

Understand the role of antipsychotics in the treatment of behavioural problems in dementia patients.



#### BACKGROUND:

First-line therapy for treating dementia-related behavioural problems (including aggression) is non-pharmacological therapy. If that is not sufficient or if the patient is at risk of harming themselves or others, drug therapy can be considered. Antipsychotics can be used in reducing severe aggression in patients with dementia. However, the lowest possible dose should be used to avoid EPS symptoms (more common with FGAs than SGAs) and tardive dyskinesia. Therefore, antipsychotics, SGAs rather than FGAs, should be used for patients with psychosis, aggression, and severe agitation. Haloperidol is to be used PRN for agitation in a patient with dementia. A Cochrane study suggests risperidone and olanzapine have demonstrated efficacy in reducing aggression in patients with a history of dementia. Atypical antipsychotics should be used with caution in patients with dementia due to an increased risk of mortality. In April 2005, the FDA issued a statement that elderly patients who were treated with atypical antipsychotic drugs were at increased risk of mortality; this advisory led to a black-box warning now included in the prescribing information for these drugs. Later in 2005, a published meta-analysis reached a similar conclusion, based on death rates of 3.5% in patients receiving atypical antipsychotic drugs and 2.3% in placebo recipients in 15 trials of 6 to 26 weeks duration. The benefits of therapy should outweigh the risk of taking the medication.

#### RATIONALE:

##### Correct Answer:

- **Risperidone** - Second-generation antipsychotics are considered appropriate for severely agitated and aggressive dementia patients.

##### Incorrect Answers:

- **Memantine** - Memantine is unlikely to be effective in a severely agitated and aggressive patient with dementia.
- **Sertraline** - Sertraline is unlikely to be effective in a severely agitated and aggressive patient with dementia.
- **Haloperidol** - Second-generation antipsychotics are preferred over first-generation antipsychotics for the treatment of agitation and aggression in patients with dementia.

#### TAKEAWAY/KEY POINTS:

Second-generation antipsychotics can be used to manage behavioural issues like aggression in dementia patients, however, use has been associated with an increased risk of mortality.

#### REFERENCE:

[1] Moore A, Patterson C, Lee L. Fourth Canadian Consensus Conference on the Diagnosis and Treatment of Dementia Recommendations for family physicians. Can Fam Physician. 2014;60(5):433-438. <http://www.cfp.ca/content/60/5/433.full>.

The correct answer is: Risperidone

#### Question 5

ID: 50156

Incorrect

Flag question

Send Feedback

You are a renal pharmacist in the nephrology unit at the hospital. A new physician approaches you to discuss a mutual patient, RV. RV is an 81-year-old male who has a significant medical history that includes chronic kidney disease (Cr Cl = 32 mL/min./1.73 m<sup>2</sup>), diabetes, dyslipidemia, hypertension, osteoarthritis, and depression. His medications include perindopril 8 mg PO daily, metformin 500 mg BID, insulin glargine 35 units subcutaneously daily at bedtime, insulin aspart 15 units subcutaneously TID before meals, atorvastatin 20 mg PO daily at bedtime, amlodipine 10 mg PO daily, acetaminophen 1000 mg PO TID, and citalopram 20 mg PO daily. RV has recently been diagnosed with Alzheimer's disease and the physician would like to start him on a cholinesterase inhibitor.

Keeping in mind that the patient has chronic kidney disease, which of the following Alzheimer's disease medications requires renal dose adjustment?

Select one:

- ☐ Donepezil ✗
- ☒ Galantamine ✓
- ☐ Rivastigmine ✗
- ☐ All cholinesterase inhibitors require renal dose adjustments ✗

Rose Wang (ID:113212) this answer is incorrect. Galantamine is the only cholinesterase inhibitor that requires renal dose adjustments.

Incorrect

Marks for this submission: 0.00/1.00.

**TOPIC:** Alzheimer's Disease

#### LEARNING OBJECTIVE:

Identify which drugs used in dementia require renal dosage adjustments.

#### BACKGROUND:

Dementia is a decline in cognitive function that results in a reduced ability to perform daily activities. This disease is chronic, progressive, and deteriorating. Different types of dementia exist (e.g. Lewy body dementia, Alzheimer's dementia, vascular dementia). Drug therapy is indicated for some of these types of dementia. Cholinesterase inhibitors such as donepezil, galantamine, and rivastigmine are often used as first-line



therapies. Memantine requires renal dosage adjustment when creatinine clearance decreases to under 30 mL/min. Donepezil does not require renal dose adjustment. Rivastigmine also does not require a dose reduction but this may be done to improve tolerability in severe renal impairment. It is best to titrate to a dose that the patient can tolerate. Galantamine requires a dose adjustment in patients with a creatinine clearance of 9 mL/min to 59 mL/min where the maximum dose is 16 mg per day. Patients with a creatinine clearance of less than 9 mL/min should not use galantamine.

#### RATIONALE:

##### Correct Answer:

- **Galantamine** - Galantamine requires renal dose adjustments.

##### Incorrect Answers:

- **Donepezil** - No renal dose adjustment is necessary for donepezil.
- **Rivastigmine** - This drug does not require renal dosing adjustments but the dose may be adjusted in severe renal impairment to improve tolerability.
- **All cholinesterase inhibitors require renal dose adjustments** - Galantamine is the only cholinesterase inhibitor that requires renal dose adjustments.

#### TAKEAWAY/KEY POINTS:

Galantamine requires renal dose adjustments.

#### REFERENCE:

- [1] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.tx.ca>.  
[2] Rivastigmine Monograph. In: Post T, ed. UpToDate. Waltham, MA.: UpToDate; 2019. [www.uptodate.com](http://www.uptodate.com).

The correct answer is: Galantamine

#### Question 6

ID: 50157

Correct

Flag question

Send Feedback

Which of the following medications does **NOT** undergo hepatic first-pass metabolism?

Select one:

- ☐ Risperidone PO ✗
- ☒ Rivastigmine transdermal patch ✓
- ☐ Donepezil PO ✗
- ☐ Galantamine PO ✗

Rose Wang (ID:113212) this answer is correct. Rivastigmine when applied as a patch does not undergo hepatic first-pass metabolism.

#### Correct

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease

#### LEARNING OBJECTIVE:

Identify which drug formulation does not undergo first-pass metabolism.

#### BACKGROUND:

Alzheimer's disease (AD) is a gradually progressive disease which affects cognition, behaviour, and memory status. AD is thought to be related to an imbalance in acetylcholine and glutamate levels in the brain. Symptoms can include being unable to care for oneself, memory loss, inability to recognize things and people, depression, and aggression. Certain drugs can be used to slow down the progression of AD. Two drug classes exist for this purpose: cholinesterase inhibitors (e.g. donepezil, galantamine, rivastigmine), and NMDA antagonists (e.g. memantine). These drugs work to blunt the acetylcholine and glutamate imbalance that is often linked to AD, and therefore slow the progression of cognitive and functional symptoms. Atypical antipsychotics (e.g. risperidone, olanzapine) and antidepressants (e.g. SSRIs, TCAs) can be used to manage behavioural symptoms if non-pharmacological therapy is ineffective. These drugs are used second-line to manage behavioural symptoms. The most commonly manufactured dosage form for medications is the oral route. Once medications are administered orally, they are absorbed in the small intestines and make their way to the liver. In the liver, they will be partially metabolized and the rest of the drug will then make it into the systemic circulation. This is known as the first-pass effect. The first-pass effect happens to most drugs taken orally and is responsible for a reduced bioavailability of many orally administered drugs. Drug formulations that are not orally administered can avoid the first-pass effect. Some examples of formulations that can avoid the first-pass effect include rectal formulations, transdermal formulations, intravenous formulations, and intramuscular formulations. While all of the drugs discussed above come in oral formulations, only rivastigmine is available in a transdermal patch formulation. This patch formulation does not undergo first-pass metabolism.

#### RATIONALE:

##### Correct Answer:

- **Rivastigmine patch** - Rivastigmine when applied as a patch does not undergo hepatic first-pass metabolism.

##### Incorrect Answers:

- **Risperidone** - Risperidone does undergo hepatic first-pass metabolism.
- **Donepezil** - Donepezil does undergo hepatic first-pass metabolism.
- **Galantamine** - Galantamine does undergo hepatic first-pass metabolism.

#### TAKEAWAY/KEY POINTS:

Rivastigmine comes in a transdermal and oral formulation. The transdermal formulation does not undergo first-pass metabolism.

#### REFERENCE:

[1] Rivastigmine. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. <https://myrxtx.ca>.

The correct answer is: Rivastigmine transdermal patch

#### Question 7

ID: 50158

Correct

Flag question

Send Feedback

**PK is a 78-year-old male who comes to your clinic for advice. His doctor recently diagnosed him with mild Alzheimer's disease and gave him a prescription for galantamine ER 8 mg PO daily in the morning. PK has a past medical history that includes non-valvular atrial fibrillation for which he takes bisoprolol 5 mg PO once daily and apixaban 5 mg PO BID. PK generally does not like to take medications and has not filled his prescription for galantamine yet. His neighbour told him about a natural health product called ginkgo biloba that supposedly helps with memory loss and he has come to ask you about it.**

Which of the following suggestions is the most appropriate for you to make to PK at this time?

Select one:

- ☐ Suggest to PK that ginkgo biloba has limited evidence but is safe for him to try ✗
- ☒ Suggest to PK that ginkgo biloba has limited evidence and is **NOT** safe for him to try ✓
- ☐ Suggest to PK that he should stop apixaban and start a trial of ginkgo biloba ✗
- ☐ Suggest to PK that ginkgo biloba has some evidence and is safe for him to try ✗

*Rose Wang (ID:113212) this answer is correct. Ginkgo biloba has limited evidence and should also be avoided in patients taking antiplatelets and anticoagulants due to increased risk of bleeding.*

**Correct**

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's diseases

#### LEARNING OBJECTIVE:

Understand the evidence for and adverse effects of ginkgo biloba.

#### BACKGROUND:

Ginkgo biloba is a herbal product that has been studied in many different medical conditions. The evidence for ginkgo's role in preventing the progression of dementia is limited. Furthermore, evidence also does not support the use of ginkgo in healthy individuals to enhance cognitive function. Ginkgo's mechanism of action is believed to be due to an increase in blood flow and a decrease in the viscosity of the blood. Adverse effects include headache, dizziness, restlessness, nausea, vomiting, diarrhea, and dermal sensitivity. Ginkgo should be avoided in patients taking anticoagulants, antiplatelets, and NSAIDs due to an increased risk of bleeding. It is believed to have the following drug interactions:

- Co-administration with thiazides increases blood pressure
- Decreases omeprazole levels
- Co-administration with acetaminophen, caffeine, or ergotamine may increase the risk of subarachnoid hemorrhage
- Co-administration with tricyclic antidepressants, trazodone, or bupropion may lower the seizure threshold

#### RATIONALE:

##### Correct Answer:

- **Suggest to PK that ginkgo biloba has limited evidence and is NOT safe for him to try** - Ginkgo biloba has limited evidence and should also be avoided in patients taking antiplatelets and anticoagulants due to increased risk of bleeding.

##### Incorrect Answers:

- **Suggest to PK that ginkgo biloba has limited evidence but is safe for him to try** - Ginkgo biloba has limited evidence and should also be avoided in patients taking antiplatelets and anticoagulants due to increased risk of bleeding.
- **Suggest to PK that he should stop apixaban and start a trial of ginkgo biloba** - Apixaban should not be stopped due to risk of complications from untreated atrial fibrillation (e.g. stroke).
- **Suggest to PK that ginkgo biloba has some evidence and is safe for him to try** - Ginkgo biloba has limited evidence and should also be avoided in patients taking antiplatelets and anticoagulants due to increased risk of bleeding.

due to increased risk of bleeding.

#### TAKEAWAY/KEY POINTS:

Ginkgo biloba has limited evidence in preventing the progression of Alzheimer's disease and should also be avoided in patients taking antiplatelets and anticoagulants due to increased risk of bleeding.

#### REFERENCE:

[1] Ginkgo biloba. In: Lexicomp. Wolters Kluwer. <https://online.lexi.com/>.

The correct answer is: Suggest to PK that ginkgo biloba has limited evidence and is **NOT** safe for him to try

#### Question 8

ID: 50209

Incorrect

Flag question

Send Feedback

Which of the following mechanisms is **NOT** thought to be associated with the pathophysiology of Alzheimer's disease?

Select one:

- ☐ Accumulation of neurofibrillary tangles ✗
- ☐ Accumulation of beta-amyloid plaques ✗
- ☒ Increased acetylcholine activity in the brain ✓
- ☐ Mitochondrial dysfunction ✗

Rose Wang (ID:113212) this answer is incorrect. Mitochondrial dysfunction can lead to oxidative stress and vascular injury.

#### Incorrect

Marks for this submission: 0.00/1.00.

**TOPIC:** Alzheimer's Disease

#### LEARNING OBJECTIVE:

Understand the pathophysiology of Alzheimer's disease.

#### BACKGROUND:

There are three proposed mechanisms as to why dementia develops in the elderly:

1) Accumulation of misfolded proteins (amyloidosis, tau protein clumps):

Misfolded proteins known as beta-amyloid plaques accumulate in the extracellular space of the brain due to the imbalance of production and clearance of these plaques from the body in a process known as amyloidosis. Furthermore, the accumulation of tau proteins, known as tau protein clumps or neurofibrillary tangles, results in the destruction of many neuronal pathways in the CNS.

2) Imbalance of neurotransmitters (acetylcholine, glutamate) in the central nervous system:

Decreased activity of acetylcholine and increased activity of glutamate in the CNS is a result of destroyed neuronal pathways in dementia.

3) Mitochondrial dysfunction (oxidative stress, inflammatory processes, vascular injury):

Accumulation of cholesterol may prevent a sufficient supply of oxygen to the brain, depriving neurons of the nutrients needed to survive, resulting in oxidative stress and cell death.

#### RATIONALE:

##### Correct Answer:

- **Increased acetylcholine activity in the brain** - Decreased acetylcholine activity in the brain is thought to be associated with Alzheimer's disease.

##### Incorrect Answers:

- **Neurofibrillary tangles** - Neurofibrillary tangles are thought to be associated with Alzheimer's disease.
- **Beta-amyloid plaques** - Beta-amyloid plaques are thought to be associated with Alzheimer's disease.
- **Mitochondrial dysfunction** - Mitochondrial dysfunction can lead to oxidative stress and vascular injury.

#### TAKEAWAY/KEY POINTS:

The pathophysiology of Alzheimer's disease is thought to be associated with neurofibrillary tangles (i.e. tau protein clumps) and beta-amyloid plaques (i.e. dense protein and cellular material deposits) that result in a decrease in acetylcholine activity and an increase in glutamate activity in the brain.

#### REFERENCE:

[1] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrxtx.ca>.

The correct answer is: Increased acetylcholine activity in the brain

#### Question 9

ID: 50212

Correct

Flag question

QS, a regular visitor at your clinic, approaches you today and looks visibly upset. You know that her husband has been diagnosed with moderate Alzheimer's disease and she has been trying to take care of him in their home. Her husband had always been adamant that he would never want to move into a retirement home. They had lived together in their current home since they were married 50 years ago. She mentions to you that she thinks his symptoms are progressing and that she may have to



consider moving him into a long-term care residence soon. You listen to her attentively as she speaks to you and provide her with reassurance. She then asks you what kind of symptoms she can expect from him as the disease progresses to severe Alzheimer's.

All the following are behavioural symptoms specific to severe Alzheimer's disease (AD), **EXCEPT**:

Select one:

- ☐ a. Hallucinations ✗
- ☐ b. Delusions ✗
- ☐ c. Sleep disturbances ✗
- ☒ d. Apraxia ✓

Rose Wang (ID:113212) this answer is correct. Apraxia is not a behavioural symptom related to severe Alzheimer's disease; it is a cognitive symptom that can present at any time throughout the illness regardless of disease severity.

#### Correct

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease

#### LEARNING OBJECTIVE:

Recognize behavioural symptoms of progressing severe Alzheimer's disease (AD).

#### BACKGROUND:

AD can be classified as mild, moderate, or severe and generally progresses over the course of about 10 years. In mild AD, cognitive decline begins and symptoms include memory loss, losing possessions, and difficulty with finances. In moderate AD, personality changes peak and symptoms include getting lost and wandering, anxiety/depression, and forgetting personal history. In severe AD, motor changes peak and symptoms include agitation/aggression, hallucinations/delusions, and sleep disturbances. Apraxia is defined as the inability to perform a task/movement when instructed even though the person understands and wants to do said task. It is a cognitive symptom of AD that can present at any time throughout the illness regardless of disease severity.

#### RATIONALE:

##### Correct Answer:

- **Apraxia** - Apraxia is not a behavioural symptom related to severe Alzheimer's disease; it is a cognitive symptom that can present at any time throughout the illness regardless of disease severity.

##### Incorrect Answers:

- **Hallucinations** - Hallucinations are behavioural symptoms related to severe Alzheimer's disease.
- **Delusions** - Delusions are behavioural symptoms related to severe Alzheimer's disease.
- **Sleep disturbances** - Sleep disturbances are behavioural symptoms related to severe Alzheimer's disease.

#### TAKEAWAY/KEY POINTS:

Behavioural symptoms associated with severe AD include agitation/aggression, hallucinations/delusions, and sleep disturbances.

#### REFERENCE:

- [1] Hogan DB, Bailey P, Black S. Diagnosis and treatment of dementia: 4. Approach to management of mild to moderate dementia. CMAJ. 2008;179(8):787-793. doi:10.1503/cmaj.070803. <http://www.cmaj.ca/content/179/8/787.full>.
- [2] Hogan DB, Bailey P, Black S. Diagnosis and treatment of dementia: 5. Nonpharmacologic and pharmacologic therapy for mild to moderate dementia. CMAJ. 2008;179(10):1019-1026. doi:10.1503/cmaj.081103. <http://www.cmaj.ca/content/179/10/1019.long>.
- [3] Herrmann N, Gauthier S. Diagnosis and treatment of dementia: 6. Management of severe Alzheimer disease. CMAJ. 2008;179(12):1279-1287. doi:10.1503/cmaj.070804. <http://www.cmaj.ca/content/179/12/1279.full>.

The correct answer is: Apraxia

#### Question 10

ID: 50159

Correct

Flag question

Send Feedback

JJ is a 74-year-old man who presents to the Emergency Department with delirium and frequent urination. His past medical history is significant for dementia, dyslipidemia and benign prostatic hyperplasia (BPH). He lives in a nursing home where nurses help him take his medications as well as wash, dress and feed him. His medications include tamsulosin 0.4mg PO OD, donepezil 5mg PO OD, Vitamin D 400 IU PO OD and rosuvastatin 5mg PO OD.

Which of the following statements is **FALSE** regarding dementia and delirium?

Select one:

- ☐ a. Dementia has a gradual onset whereas delirium has a rapid onset ✗
- ☐ b. A patient's orientation and attention may be intact with initial dementia but not during acute delirium ✗

- ☒ c. Both dementia and delirium are reversible with pharmacological therapy ✓

*Rose Wang (ID:113212) this answer is correct. Although delirium may resolve on its own, dementia is not considered a reversible disease.*

- ☐ d. Dementia has a long-term duration whereas delirium has a short-term duration ✗

**Correct**

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Understand the differences between dementia and delirium.

**BACKGROUND:**

Two distinct causes of altered mental status in the elderly population that are often confused with each other include dementia and delirium. It is important to distinguish the differences between these two conditions because they differ in both prognoses and management. Delirium is considered to be an acute state of confusion that develops rapidly over the course of days to weeks whereas dementia has a much more gradual onset. The course of delirium can fluctuate (i.e. can deteriorate and then improve) whereas dementia is considered a chronic and progressive disease. Attention and orientation to the environment can be periodically impaired with delirium but are generally intact during the initial stages of dementia. Delirium can resolve on its own or with appropriate treatment of the underlying cause (e.g. infection, substance intoxication or withdrawal, underlying medical condition) whereas dementia is irreversible.

**RATIONALE:**

**Correct Answer:**

- **Both dementia and delirium are reversible with pharmacological therapy** - Although delirium may resolve on its own, dementia is not considered a reversible disease.

**Incorrect Answers:**

- **Dementia has a gradual onset whereas delirium has a rapid onset** - Dementia does have a gradual onset whereas delirium has a rapid onset.
- **A patient's orientation and attention may be intact with initial dementia but not during acute delirium** - Orientation and attention are initially intact with dementia but may be temporarily impaired during an episode of delirium.
- **Dementia has a long-term duration whereas delirium has a short-term duration** - Dementia does have a long-term duration whereas delirium has a short-term duration.

**TAKEAWAY/KEY POINTS:**

Dementia has a gradual onset, a progressive course in nature, a long-term duration, may be associated with normal attention and intact orientation in early stages, and is irreversible. Delirium has a rapid onset, a fluctuating course in nature, a short-term duration, may be associated with fluctuating attention and periodically impaired orientation, and is reversible.

**REFERENCE:**

[1] Fang X, Gogia B. Differentiating delirium versus dementia in the elderly. *StatPearls Publishing LLC*. 2022.

The correct answer is: Both dementia and delirium are reversible with pharmacological therapy

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